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PATENT SPECIFICATION

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DRAWINGS ATTACHED

(19)



1 305 655

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(54) AN IMPROVED MOBILE ELECTRIC POWER UNIT

(71) We, BRITISH INSULATED CALLENDER'S CABLES LIMITED, a British Company of 21 Bloomsbury Street, London, W.C.1., do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to mobile electric power units that are especially, but not exclusively, suitable for providing electrical power at electric cable jointing and terminating installations where the use of tools employing a naked flame or of naked flames generally is undesirable because of the danger of fire. In the interests of safety the use of naked flames is particularly undesirable in enclosed spaces, for instance in manholes or cable tunnels, and it is an object of the present invention to provide, for use with electrically powered jointing tools, a mobile electric power unit whose size and weight enable it to be manoeuvred to locations where access for large equipment is difficult and which is of such a construction that the noise emitted by the unit is maintained at a low level.

According to the invention the mobile electric power unit comprises a carriage supporting a sound-insulated compartment which houses an electric power source, a prime mover for driving the power source and means for drawing air into the compartment and prime mover for cooling the power source and prime mover, a second compartment in communication with the sound-insulated compartment into which warm air from the prime mover is directed, means for extracting warm air from the sound-insulated compartment into the second compartment and, mounted in the second compartment, means for effecting circuitous deflection of the warm air in the second compartment before it is expelled to the atmosphere, whereby the noise emitted

by the unit is maintained at a low level.

The second compartment is preferably mounted above the sound-insulated compartment and is preferably divided into two separate sub-compartments into one of which the warm air from the prime mover is directed and into the other of which the warm air from the sound-insulated compartment is drawn. Each of these sub-compartments is preferably bounded in part by walls of sound-insulating material, which or may not form part of the deflecting means for the warm air. The deflecting means in each sub-compartment preferably comprises a plurality of separate curvilinear walls upstanding from the base wall of the sub-compartment and so arranged as to deflect the warm air, through a circuitous path. A grille or similar exit for the warm air will be provided in a wall of each sub-compartment, preferably in a side wall thereof.

Preferably the base wall of the sound-insulated compartment has at least one opening through which air is drawn and the compartment preferably includes means for deflecting cool air as it enters the compartment in a circuitous path around the lower part of the power unit, and its prime mover before the air is drawn upwardly through the compartment. These deflecting means are preferably lined with sound-insulating material.

The electric power source preferably comprises an electric generator driven by an internal combustion engine, the power source being mounted on pads of anti-vibration material.

To provide for easy movement of the carriage, it preferably has one or more pairs of wheels, preferably two pairs, and is preferably provided with means by which it can be attached to a power driven vehicle in order that it can be towed. Alternatively, the carriage may be self-propelled, for in-

stance by an electric battery. Where the carriage is required to be moved over uneven terrain, manoeuvring of the carriage may be facilitated by supporting the carriage on a cushion of air by the ground-effect.

The invention will be further illustrated by a description, by way of example, of a preferred form of mobile electric power unit with reference to the accompanying drawings, in which:

Figure 1 is a sectional side elevation of the unit;

Figure 2 is a sectional end elevation of the unit;

Figure 3 is a fragmentary sectional plan view of the unit, and

Figure 4 is a fragmentary sectional side elevation of the unit through X-X'.

Referring to the drawings, the unit comprises a carriage 1 having two pairs of wheels 2 spaced along its length. A sound-insulated compartment 3 is supported between the pairs of wheels 2 and houses the electric power source which comprises a 5.5 KVA generator 4 driven by an air cooled diesel engine 5 and which is supported on anti-vibration pads 6.

In the base wall 31 of the sound-insulated compartment 3 are openings 7 (Figure 1) through each of which is drawn by a fan 8, air whose direction of flow is indicated by solid-lined arrows A for cooling the diesel engine 5, air whose direction of flow is indicated by chain arrows B for cooling the generator 4 and the sound-insulated compartment 3, and air whose direction of flow is indicated by chain-dotted arrows C for the diesel engine combustion, lower parts 9 of the end walls 32 of the compartment being curved to combine with substantially horizontal vanes 10 to provide a circuitous path for the cooling air around each of a lower part of the compartment. Mounted above the sound-insulated compartment 3 is a second compartment 12 divided into two sub-compartments 14 and 15 (Figure 2), each of which is sound-insulated. The sub-compartment 14 is provided with separate upstanding curved vanes 16 (Figures 3 and 4) for deflecting in a circuitous path the warm air received from the engine 5 through a duct 22 and the sub-compartment 15 has similar vanes 18 (Figure 3) for reflecting warm air which is extracted from the sound-insulated compartment by fans 17. The warm air from the diesel engine 5 is expelled to the atmosphere through a grille (not shown) in a side wall 20 of the sub-compartment 14 and the warm air from the sound-insulated compartment 3 is expelled to the atmosphere through a grille (not shown) in a side wall 30 (Figures 2 and 3) of the sub-compartment 15.

If desired the warm air from the engine 5 being deflected through the sub-compartment

14 may be caused to flow through an opening 25 (Figure 1 and 3) via flexible ducting (not shown) connected at the opening for use, for example, in drying a cable joint or warming the joint bay or other environment where the power unit is being employed.

With a view to maintaining the noise emitted by the exhaust gas, whose direction of flow is indicated by dotted arrows D, of the diesel engine 5, at a low level, the exhaust system of the engine follows a circuitous path through the compartment 3 leaving the engine at 23 and emerging through the base wall of the compartment at an opening 24. The exhaust system is lagged with a suitable material to suppress heat radiation and noise emission and exhaust absorption material is introduced into the system.

At each end of the carriage are storage compartments 19 suitable for housing cable jointing tools and each having a hinged lid 40. The sound-insulated and second compartments and the storage compartments are enclosed in a body 21 formed of panels of fibre glass. The carriage will normally be provided with a towing bar, (not shown), for attachment to a lorry or other power driven vehicle.

The mobile electric power unit described by way of example weighs approximately 1270 kgm and is approximately 2.25 m. long, 1.5 m. wide and 1.2 m high. It can therefore be manoeuvred easily by two men and can be used at locations where access for large equipment would be difficult. Furthermore, in congested situations the unit is an important contribution to road safety because its relatively low height permits people of average height to observe oncoming traffic.

WHAT WE CLAIM IS:—

1. A mobile electric power unit comprising a carriage supporting a sound-insulated compartment which houses an electric power source, a prime mover for driving the power source and means for drawing air into the compartment and prime mover for cooling the power source and prime mover, a second compartment in communication with the sound-insulated compartment into which warm air from the prime mover is directed, means for extracting warm air from the sound-insulated compartment into the second compartment and, mounted in the second compartment, means for effecting circuitous deflection of the warm air in the sound compartment before it is expelled to the atmosphere, whereby the noise emitted by the unit is maintained at a low level.

2. A mobile electric power unit comprising a carriage supporting a sound-insulated

ing compartment which houses an electric power source, a prime mover for driving the power source and means for drawing air into the compartment and prime mover for cooling the power source and prime mover, a second compartment divided into two separate sub-compartments into the first of which the warm air from the prime mover is directed and into the second of which the warm air from the sound-insulated compartment is drawn, means for extracting warm air from the sound-insulated compartment into the second sub-compartment and, mounted in each sub-compartment, means for effecting circuitous deflection of the warm air in each sub-compartment before it is expelled to the atmosphere, whereby the noise emitted by the unit is maintained at a low level.

3. A mobile electric power unit comprising a carriage supporting a sound-insulated compartment which houses an electric power source, a prime mover for driving the power source and means for drawing air into the compartment and prime mover for cooling the power source and prime mover, at least one opening in the base wall of the sound-insulated compartment through which air is drawn, means for deflecting the air as it enters the compartment in a circuitous path around the lower part of the compartment before the air is drawn upwardly through the compartment, a second compartment in communication with the sound-insulated compartment into which warm air from the prime mover is directed, means for extracting warm air from the sound-insulated compartment into the second compartment and, mounted in the second compartment, means for effecting circuitous deflection of the warm air in the second compartment before it is expelled to the atmosphere, whereby the noise emitted by the unit is maintained at a low level.

4. A mobile electric power unit comprising a carriage supporting a sound-insulated compartment which houses an electric power source, a prime mover for driving the power source and means for drawing air into the compartment and prime mover for cooling the power source and prime mover, at least one opening in the base wall of the sound-insulated compartment through which air is drawn, means for deflecting the air as it enters the compartment in a circuitous path around the lower part of the compartment before the air is drawn upwardly through the compartment, a second

compartment divided into two separate sub-compartments into the first of which the warm air from the prime mover is directed and into the second of which the warm air from the sound-insulated compartment is drawn, means for extracting warm air from the sound-insulated compartment into the second sub-compartment and, mounted in each sub-compartment, means for effecting circuitous deflection of the warm air in each sub-compartment before it is expelled to the atmosphere, whereby the noise emitted by the unit is maintained at a low level.

5. A mobile electric power unit as claimed in Claims 2 and 4, in which each sub-compartment is bounded in part by walls of sound-insulating materials.

6. A mobile electric power unit as claimed in Claims 5, in which the walls of sound-insulating material form part of the deflecting means for the warm air.

7. A mobile electric power unit as claimed in Claims 2, 4, 5 and 6, in which the deflecting means in each sub-compartment comprises a plurality of separate curvilinear walls upstanding from the base wall of each sub-compartment and so arranged as to deflect the warm air through a circuitous path.

8. A mobile electric power unit as claimed in Claims 3 and 4, in which the means for deflecting air as it enters the sound-insulated compartment in a circuitous path around the lower part of the compartment is lined with sound-insulating material.

9. A mobile electric power unit as claimed in any one of the preceding Claims, in which the second compartment is mounted above the sound-insulated compartment.

10. A movable electric power unit as claimed in any one of the preceding Claims, in which the carriage is mounted on one or more pairs of road wheels.

11. A mobile electric power unit as claimed in Claims 1 to 14, in which the carriage is supported on a cushion of air by the ground-effect.

12. A mobile electric power unit substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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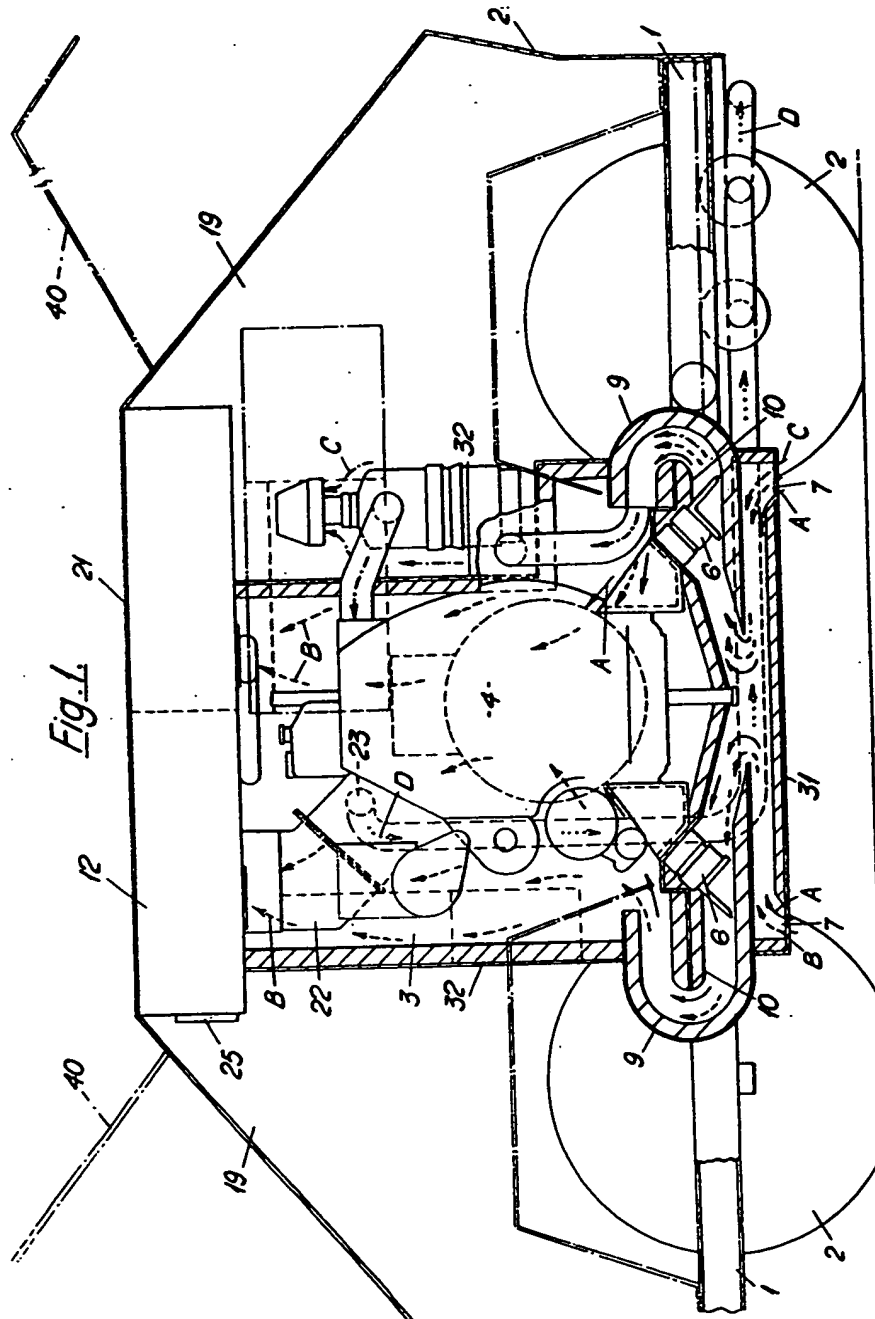
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COMPLETE SPECIFICATION

3 SHEETS

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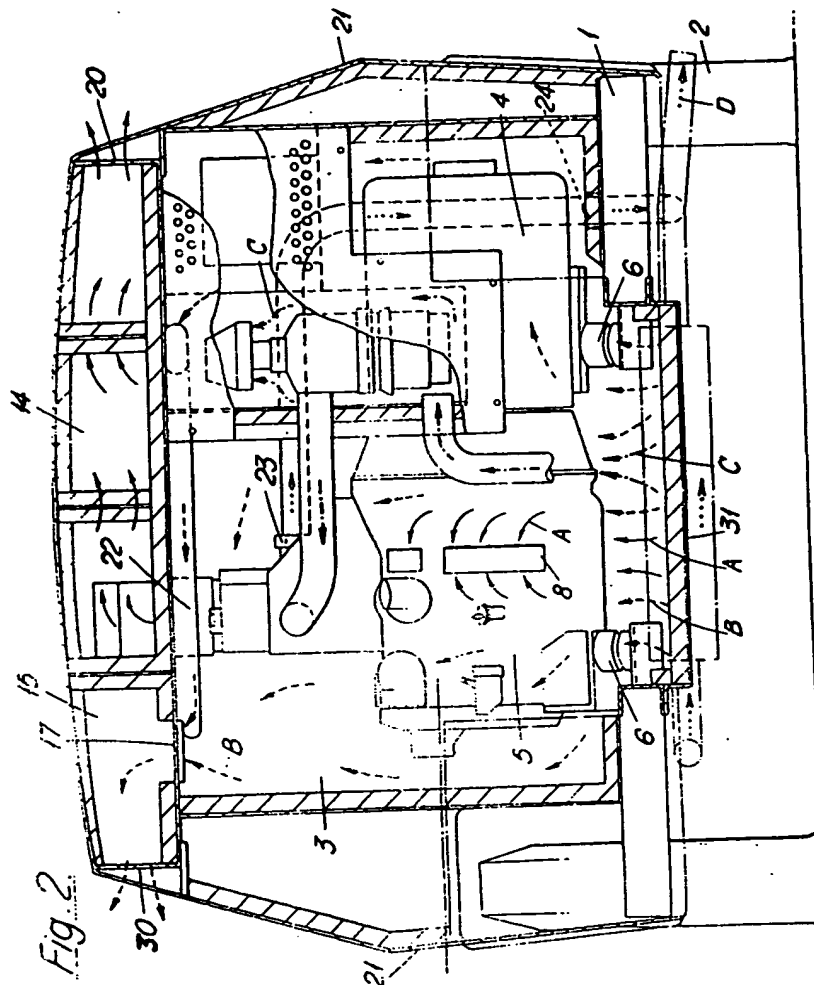
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Fig. 3.

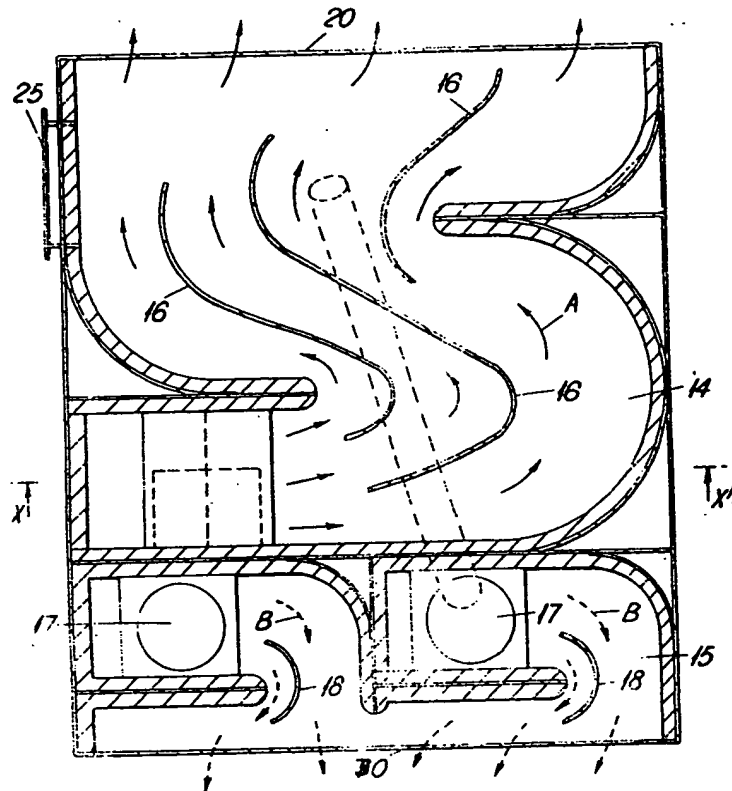


Fig. 4.

